

REMARKS

In the Office Action, election of claims 1-21 was made final. Claims 1-21 were rejected under 35 U.S.C. § 103(a). The claims 1-21 were also objected due to certain informalities. The drawings were objected to for failing to comply with 37 CFR 1.84 (P)(4). By present response, claims 1, 5, 12 and 19 are amended and a new claim 28 is added. Upon entry of the amendments, claims 1-21 and claim 28 will be pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Objection to the Drawings

The drawings were objected to for failing to comply with 37 CFR 1.84 (P)(4). By present response, the drawings have been replaced to obviate the objections raised in the Office Action. In particular, the lead line for reference numeral 52 has been altered in Figure 5 to indicate the fiber tips in a manner consistent with Figure 4. Review and acceptance of the replacement drawings are requested.

Claim objections due to informalities

Claims 1-21 were objected to because of certain informalities. Applicants respectfully submit that the informalities objected to may have arisen during electronic filing of the patent application. Applicants further submit that the present response obviates the objections raised in the office action.

Rejections Under 35 U.S.C. § 103

Claims 1, 2, 4, and 6-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilson, et al. (U.S. Patent Publication no. 2001/0006601A1; hereinafter "Wilson") in view of Turnquist, et al. (U.S. Patent no. 6,045,134; hereinafter "Turnquist"), and further in view of Aksit, et al. (U.S. Patent no. 6,406,027; hereinafter "Aksit"). Of these, only claim 1 is independent.

For a *prima facie* case of obviousness, the Examiner must set forth the differences in the claim over the applied reference, set forth the proposed modification of the reference, which would be necessary to arrive at the claimed subject matter, and explain why the proposed modification would be obvious. Applicants respectfully submit that in view of the present amendments, a *prima facie* case of obviousness is not supported against claims 1, 2 4, and 6-16 for rejection under 35 U.S.C. § 103(a).

The references fail to teach an envelope for receiving a brush seal assembly.

In formulating the rejection of claim 1, the examiner essentially argued that it would have been obvious to configure the metallic clearance seal of Wilson to include a metallic clearance seal having the brush seal arrangement of Turnquist. Applicants respectfully submit that nowhere in the references is it taught that the metallic clearance seals of Wilson and or the brush seal of Turnquist define an envelope configured to receive a brush seal assembly as claimed. Specifically, metallic clearance seal taught by Turnquist comprise support plates 38 and 40 on opposite axial sides of the bristles 36 of the brush seal assembly 32. *See* Turnquist, column 4, lines 23-28). The support plates 38 and 40 do not form an enclosure in which a brush seal assembly is received. Indeed, they must be considered to form part of the assembly, as they are actually welded to the brushes, as discussed below. Moreover, the “arcuate ring seal segments 20” of Turnquist cannot be considered as the claimed clearance seal (that defines the claimed envelope), as it is not disposed in a fixed radial position with respect to the rotating component, as discussed below.

The references fail to teach a metallic clearance seal disposed in a fixed radial position with respect to a rotating component.

Further, the above references do not describe a metallic clearance seal fixed in a radial position with respect to a rotating component as recited by the presently amended claim 1. Wilson fails to describe the brush seal assembly of the claimed invention and Turnquist requires the arcuate seal ring segments 20 that houses the brush seal 32 to be

spring-backed and movable with respect to the rotating component. *See*, Turnquist, column 4, lines 9-12 and lines 20-25.

Turnquist cannot be combined with Aksit because the metallic bristles of Turnquist are welded to the support plates 38 and 40.

Furthermore, the examiner argued that it would have been obvious to configure the bristles of Turnquist to be made of a non-metallic material as taught by Aksit. Applicants respectfully disagree. The metallic bristles 30 of the brush seals 32 of Turnquist cannot be replaced by non-metallic seals without completely redesigning the Turnquist arrangement in a manner that is antithetical to its teachings. According to Turnquist, the bristles 32 are welded to one another and are further welded to the support plates 38 and 40:

FIG. 1 also illustrates the seal ring segment having a combination labyrinth/brush seal. As illustrated, the seal ring segments may each be provided with a brush seal, generally designated 32. The brush seal 32 may be provided as original equipment or retrofit into existing seal ring segments. Each brush seal comprises a support 34 for a plurality of elongated bristles 36. For example, the support 34 may comprise a pair of generally arcuate support plates 38 and 40 on opposite axial sides of the bristles 36. The brush seal supports 34 are co-terminus with the seal ring segments and have end faces lying along the same radial planes as the end faces of the seal ring segments. *The support plates are welded to one another along their radially outermost ends with the bristles welded to one another and to the plates at the same location.*

Turnquist, column 4, lines 20-33 (emphasis added).

Applicants submit that is not possible to replace the non-metallic bristles of Aksit as these bristles could not be welded to the support plates of the brush seal assembly as taught by Turnquist.

In light of the above arguments, and in view of the present amendments, Applicants respectfully submit that no combination of the cited references could be made that would render the claimed invention obvious.

Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Wilson, Turnquist and Aksit as applied to claim 1, and further in view of Short (U.S. Patent no. 5,351,971; hereinafter "Short"). Claim 19 recites features essentially similar to those discussed above recited in claim 1, in addition to other features. To that extent, Applicants respectfully submit that, for the same reasons as those discussed above, the present invention as recited in the independent claim 19 is patentable over the teachings of Wilson, Turnquist, Aksit and Short. Applicants note that Short does nothing to obviate the deficiencies of Wilson, Turnquist or Aksit discussed above.

Claims 2-18 and 20-21 depend directly or indirectly from independent claims 1 and 19. These claims, too, were rejected as obvious in view of various combinations of references. However, Applicants submit that claims 2-18 and 20-21 are allowable by virtue of their dependency from an allowable base claim, as well as for the subject matter they separately recite. Thus, it is respectfully requested that the rejections of claims 2-18 and 20-21 under 35 U.S.C. §103(a) be withdrawn.

New Claim


A new claim 28 has been added that is believed to be allowable for the same reasons as claims 1 and 19.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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Page 2

IN THE DRAWINGS

Please replace Figure 5 with the appended replacement page.